

**TRAIN ROBBERY: *MENEMERUS BIVITTATUS* (DUFOUR, 1831)
(ARANEAE: SALTICIDAE) STEALS LARVAE OF
TECHNOMYRMEX SOPHIAE FOREL, 1902 (HYMENOPTERA:
FORMICIDAE) IN TRANSIT**

DANIEL C. HUSTON

School of Biological Sciences, University of Queensland, St Lucia, Qld 4072

(Email: Daniel.Huston@uqconnect.edu.au)

Abstract

The kleptoparasitic behaviour whereupon a spider steals material being transported by ants, known as ‘snatching’, is reported from the jumping spider *Menemerus bivittatus* (Dufour, 1831) in Queensland, Australia for the first time. Both male and female spiders were observed on multiple occasions stealing larvae of the tropical pedicel ant *Technomyrmex sophiae* Forel, 1902 being transported by workers. The present report supports the view that this behaviour is common across the pantropical range of the spider and likely represents an innate, rather than a learned, foraging strategy.

Introduction

Salticidae, the jumping spiders, represent the largest family of spiders (WSC 2017), a group known for their well-developed visual system and complex predatory behaviour (Richman and Jackson 1991, Jackson and Pollard 1996, Bartos and Szczepko 2012, Bartos and Minias 2016). Many salticids specialise in the exploitation of ants (*e.g.* Jackson and Nelson 2012), with some species choosing to steal what the ants are currently transporting rather than feeding upon them directly (Jackson *et al.* 2008, Cushing 2012, Jackson and Nelson 2012).

Species of the salticid genus *Menemerus* Simon, 1868 have been reported to engage in kleptoparasitic behaviour, termed ‘snatching’, by Jackson *et al.* (2008), who noted that this behaviour was originally mentioned by Bhattacharya (1936) in reference to *M. bivittatus* (Dufour, 1831) from India. This snatching behaviour was later well described from observations of three species of *Menemerus*, including *M. bivittatus*, made by Jackson *et al.* (2008) in Kenya. More recently, this behaviour was again reported in *M. bivittatus* in Brazil (Halfeld 2015). These reports from Africa, India and South America indicate that this snatching behaviour may be common in *M. bivittatus* across its pantropical range. In Australia, *M. bivittatus* is commonly found in and around human dwellings (Richardson *et al.* 2006).

Methods

On several occasions between 2015 and 2017, on the wooden exterior balcony of the author’s residence in Brisbane, Australia, individuals of *M. bivittatus* (Fig. 1) were repeatedly observed snatching larvae of *Technomyrmex sophiae* Forel, 1902 being transported by workers. Both male and female *M. bivittatus* were observed engaging in this behaviour. Each of these instances was carefully observed and two instances were recorded with a digital video camera. A shortened video of these observations has been

made available on YouTube at the following URL: <https://youtu.be/KF9FJLHic20>. Ants were initially identified as *T. sophiae* using the guide to ants of Brisbane provided by Burwell (2007) and identification was confirmed using the keys provided by Shattuck (2000) and Bolton (2007). Spiders were identified using the resources provided by Prószyński (2016) and ALA (2017).



Fig. 1. Male *Menemerus bivittatus* observed engaging in kleptoparasitic ‘snatching’ behaviour in Brisbane, Queensland.

Results

The behaviour exhibited by *M. bivittatus* was much as that described by Jackson *et al.* (2008). In the present study, spiders observed the moving column of ants from a few centimetres distance until an individual ant transporting a larva was selected (Figs 2A-B). The spider would then intercept the moving ant by blocking its path and snatch the larva from the mandibles of the ant (Figs 2C-F). Upon successful theft of the larva, the spider would retreat from the ant column in order to feed (Figs 2G-I). Not all snatching attempts were successful, with about 25% of observed attempts failing. It is not known if these failures occurred due to a mistake on the part of the spider, an individual ant possessing superior defensive technique, or some other combination of factors. After feeding, the spider returned to observing the ant column. When a *T. sophiae* worker was robbed of the larva it was transporting, the ant ran in tight circles, interpreted as searching, for approximately one second before continuing on its original path. On occasion, the ants would pursue the spider for a short distance, although they were quickly outmanoeuvred, with the ants returning to their original path.

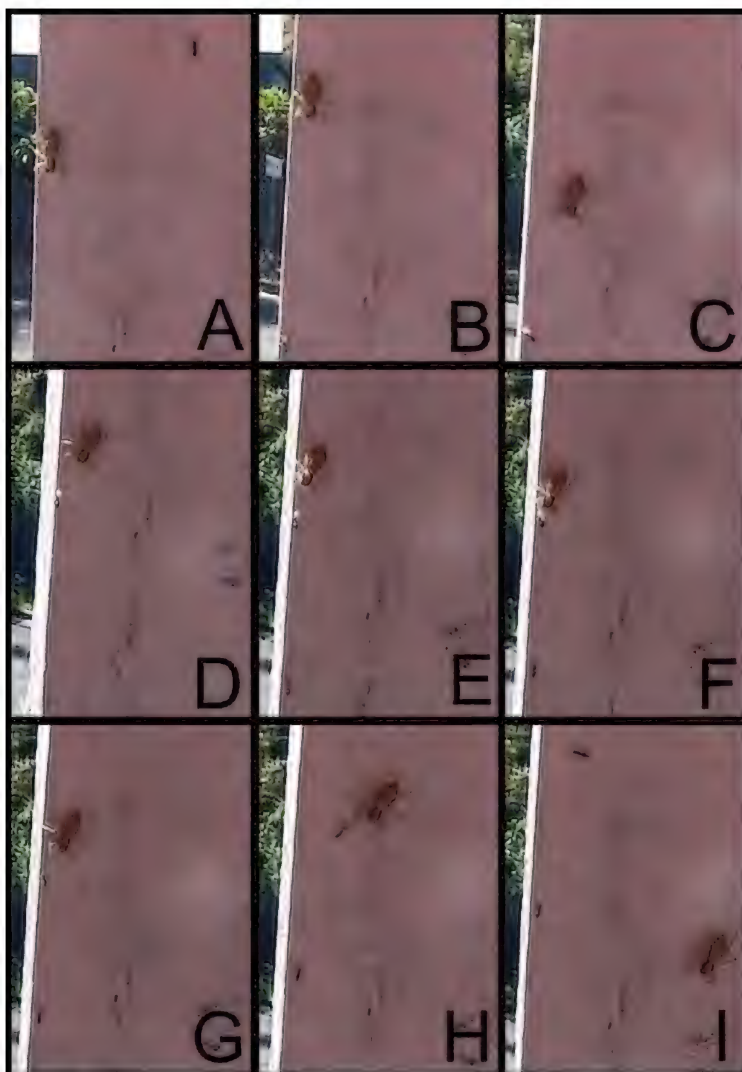


Fig. 2. Female *Menemerus bivittatus* performing 'snatching' behaviour. Photograph series taken from video: (A-C) orientation and identification of target ant; (D-F) interception of target ant and theft of larva; (G-I) escape and feeding.

Discussion

Combined with the reports of snatching in India (Bhattacharya 1936), Africa (Jackson *et al.* 2008) and South America (Hanfeld 2015), the present report provides additional evidence demonstrating that snatching is likely used

across the entire pantropical distribution of the spider and is not a tactic unique to specific populations. Thus, snatching in *M. bivittatus* appears most likely an innate strategy, rather than a learned behaviour. To the author's best knowledge, there has been no previous documentation of any interactions occurring between *M. bivittatus* and *T. sophiae*, the latter an abundant species of ant in and around Brisbane (Burwell 2000). The exploitation of this ant species by *M. bivittatus* is thus likely to be a common occurrence.

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